a2 cont'd calculating the magnetic susceptibility of the object based on the detected induced current.

REMARKS

The Office Action dated October 2, 2002 has been given careful consideration by the applicants. The Examiner's recognition of allowable subject matter is acknowledged and appreciated. Nonetheless, reconsideration of the application is hereby respectfully requested. Claims 1-16 remain in the application.

The Examiner's Action

The Examiner objected to the title of the invention.

The Examiner required an abstract of the disclosure.

The Examiner objected to the drawings.

The Examiner rejected claims 4-5 under 35 U.S.C. §112, second paragraph.

The Examiner rejected claims 1, 2, 4-5, and 16 under 35 U.S.C. §103 as being unpatentable over U.S. Patent No. 5,589,772 to Kugai.

The Examiner allowed claims 6-15.

Claim 3 was objected to as being dependent upon a rejected base claim but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The Rejected Claims Are Distinguishable Over The Cited Art

The Examiner rejected claims 1, 2, 4-5, and 16 under 35 U.S.C. §103 as being unpatentable over Kugai. However, as will be apparent from the discussion below, these claims are not rendered obvious by the Kugai patent.

More particularly, the Examiner asserts that Kugai discloses a magnetic field generating means, a superconducting quantum interference device, and a flux transformer that couples the susceptivity signal to the superconducting quantum interference device. However, even if that is the case, Kugai does not specify a high T_c superconductivity environment of operation. Indeed, it is submitted that the system of Kugai could not be implemented in a high T_c environment, as the present invention, because the coils of wire of the flux transformer described in Kugai cannot be constructed using high T_c superconductive material. Along these lines, Kugai does not fairly

disclose the flexible, high T_c flux transformer of the present invention.

Conversely, independent claims 1 and 16 recite language placing the invention of the present application in the high-T_c environment. Specifically, claim 1 recites that the superconducting quantum interference device is constructed from material having a critical temperature above 77K. Moreover, claim 1 recites a flexible superconducting flux transformer comprising superconducting material disposed on a flexible metallic substrate. Claim 16, as amended, recites the flexible flux transformer formed of a superconducting material on a flexible substrate.

These features in combination are not disclosed nor fairly suggested by the Kugai patent. Accordingly, these claims, and the claims dependent thereon, are not rendered obvious thereby.

Non-Art Rejections

Claim 4-5 were rejected under 35 U.S.C. §112, second paragraph. The claims have been amended as suggested to overcome the rejection.

Drawing Objections

The Examiner objected to the drawings, stating that the drawings must show every feature of the invention specified in the claims. Specifically, the Examiner indicated that the subject matter of claim 6, line 6-12, must be shown or the features cancel from the claims.

It is respectfully submitted that the drawings show these features. The Examiner is referred to Figures 4(a) and 4(b) and Figures 5 and 8 in this regard.

Other Matters

The Examiner objected to the title of the invention. A new title has been proposed.

The Examiner further objected to the application because it does not contain an abstract of the disclosure as required by 37 C.F.R. 1.72b. Although an abstract was included in the original filed application on the cover page, a new abstract is proposed herein. The abstract is also provided on a separate page herein.

CONCLUSION

In view of the foregoing, all claims are now submitted to be in condition for allowance. Early notification of such allowance is hereby respectfully requested.

Authorization is hereby provided to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. 06-0308.

Respectfully submitted,

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Attachment: Version with Markings to Show Changes Made

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Abstract of the Disclosure:

Please replace the Abstract of the Disclosure with the rewritten Abstract of the Disclosure located below and attached on a separate sheet attached hereto:

- -ABSTRACT OF THE DISCLOSURE

An apparatus and method for determining magnetic susceptibility in an object is provided. The system includes a permanent magnet, a superconducting quantum interference device, and a flux transformer. The flux transformer is formed of superconducting material disposed on a flexible metallic substrate. The system operates in a high T_c environment.- -

In the Claims:

Please amend the claims as follows:

4. (Amended) The apparatus as set forth in claim 1 wherein the object is the [(in-vivo)] human liver.

5. (Amended) The apparatus as set forth in claim 1 wherein the object is [(in-vivo)] human bone.

11. (Amended) The apparatus of claim 6 further comprising:

a data processing system;

at least one superconducting quantum interference device controller;

at least one cable connecting the at least one superconducting quantum interference device to the at least one superconducting quantum interference device controller;

at least one cable connecting the at least one superconducting quantum interference device controller to the data processing system;

data acquisition software run on the data processing system;

system control software run on the data processing system;

data analysis software run on the data processing system[.];

a housing enclosing the at least one magnetic field source, the at least one superconducting flux transformer, and the at least one superconducting quantum interference device;

a gantry supporting the housing;

a support surface for supporting the object in proximity to the housing; and,

an interface device between the housing and the object.

16. (Amended) A method for determining magnetic susceptibility in an object, the method comprising steps of:

applying a magnetic field to a zone using a permanent magnet;

~~moving the object into the zone~~;

inducing a current in a flexible superconducting flux transformer, formed of a superconducting material disposed on a flexible substrate, based on a change in the magnetic field when the object is moved into the zone;

detecting the induced current in the transformer by a superconducting quantum interference device that has a high critical temperature; and

calculating the magnetic susceptibility of the object based on the detected induced current.